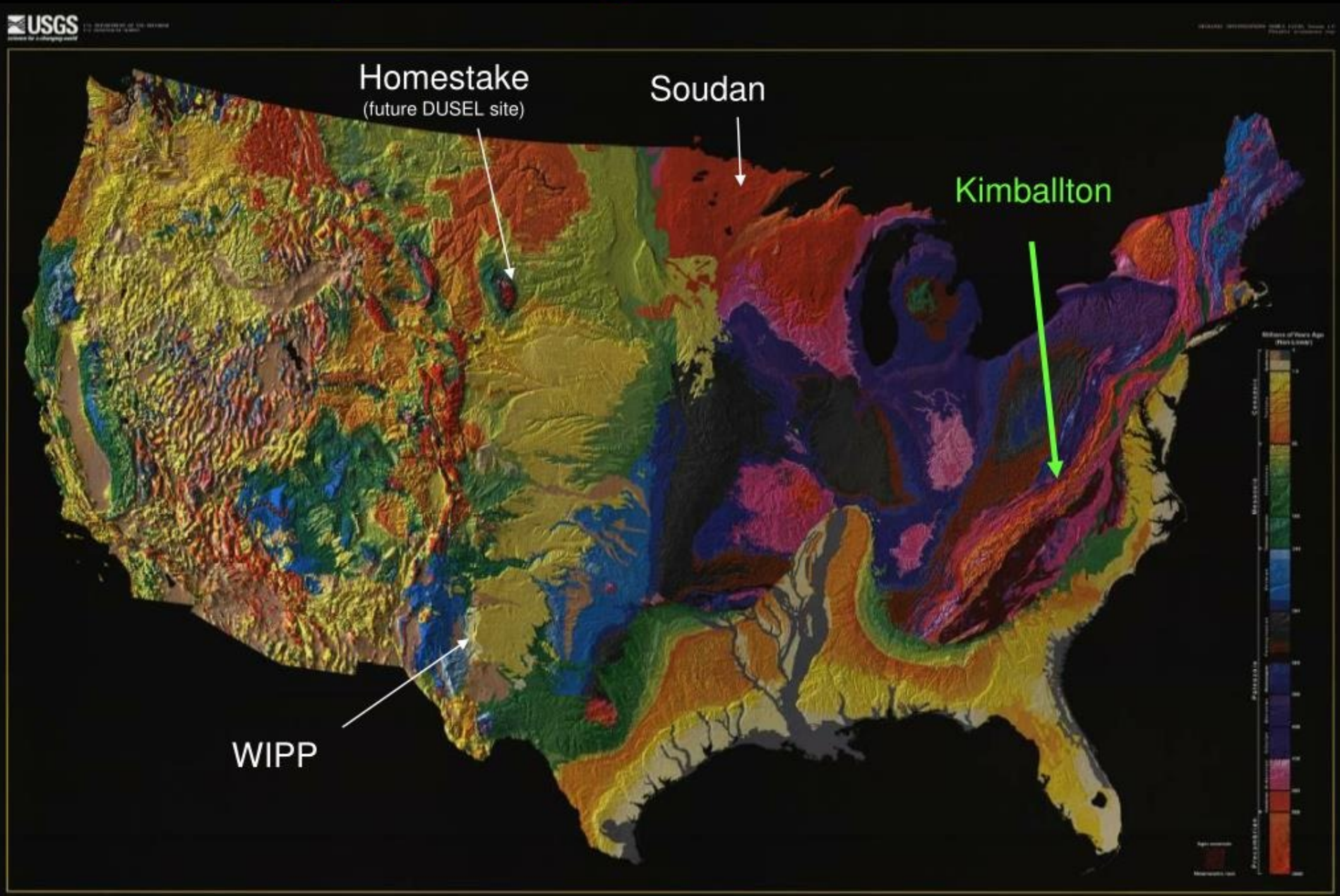
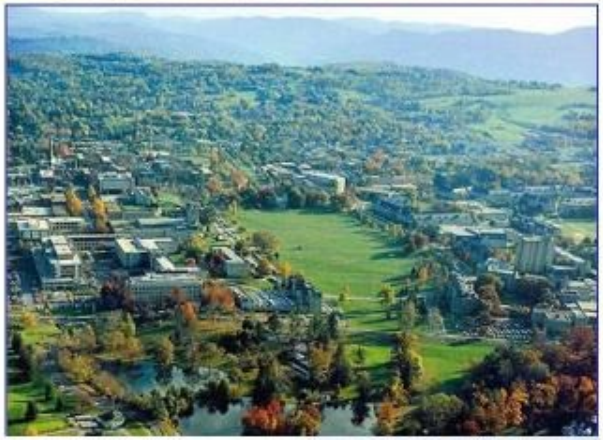
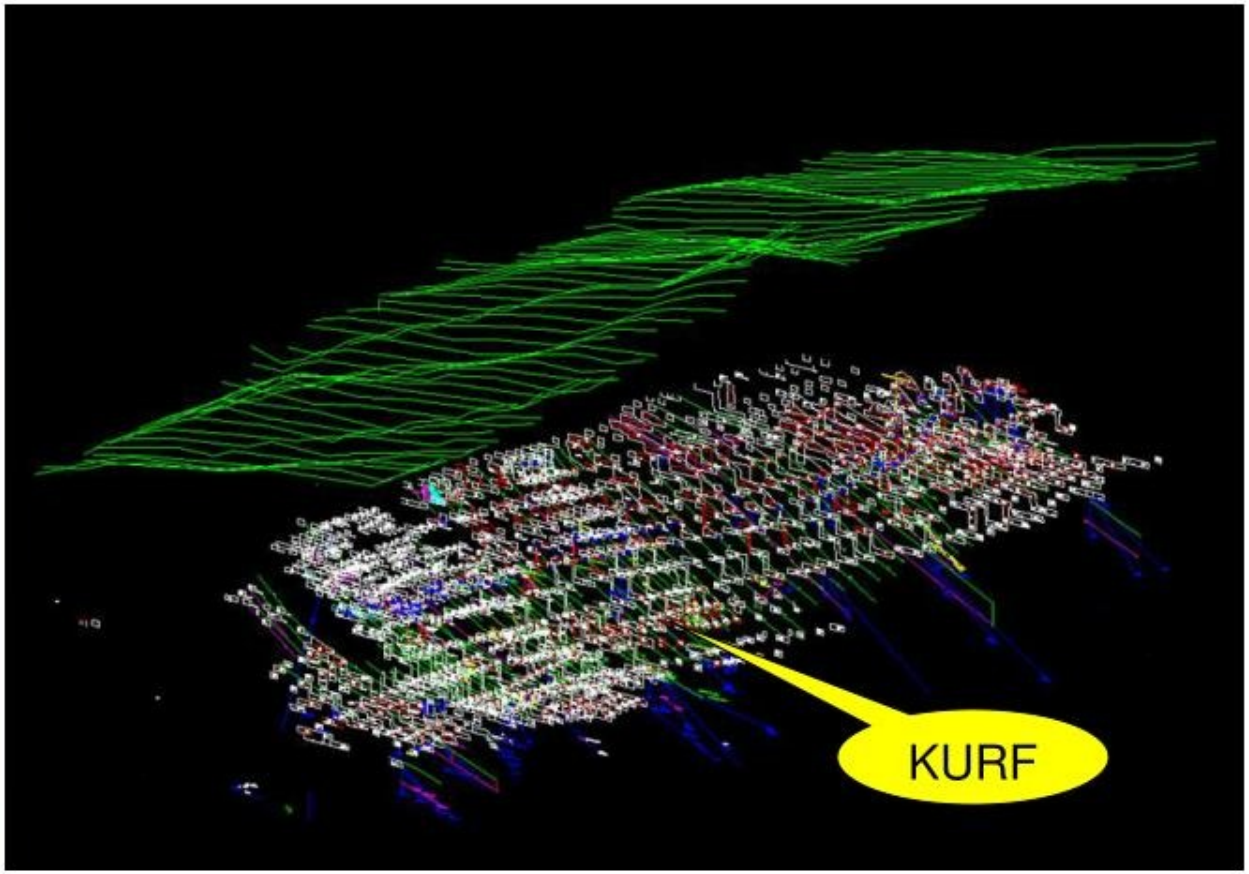
US Deep Underground Laboratories





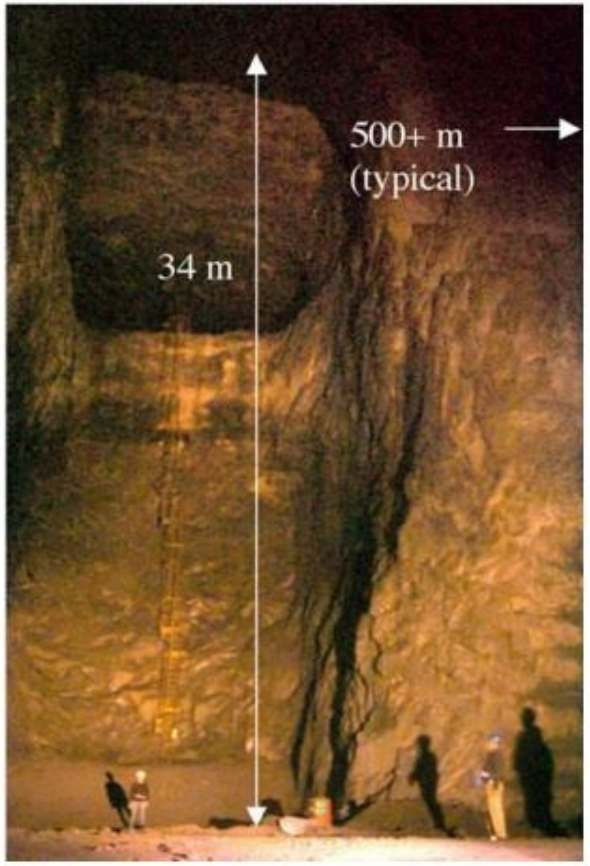
The Kimballton site:

- **30 minutes from Virginia Tech**
- **largest research university in Virginia (28,000 students)**
- **technical infrastructure and academic environment in the *immediate* vicinity of laboratory is unique**



~ 1 mile

- Current maximum depth of mine – 2300' (~1900 mwe assuming limestone)
- over 50 miles of stopes
- 700 kton of high-grade limestone removed per year (~7 Gran Sasso Hall C's/yr)
- Current facility at 1700' (~1450 mwe)
- low U/Th in rock, and low Rn levels due to high air-flow
- relatively impermeable limestone results in a 'dry location'



Drive-in Access:

Width 42’ (12.8 meters)

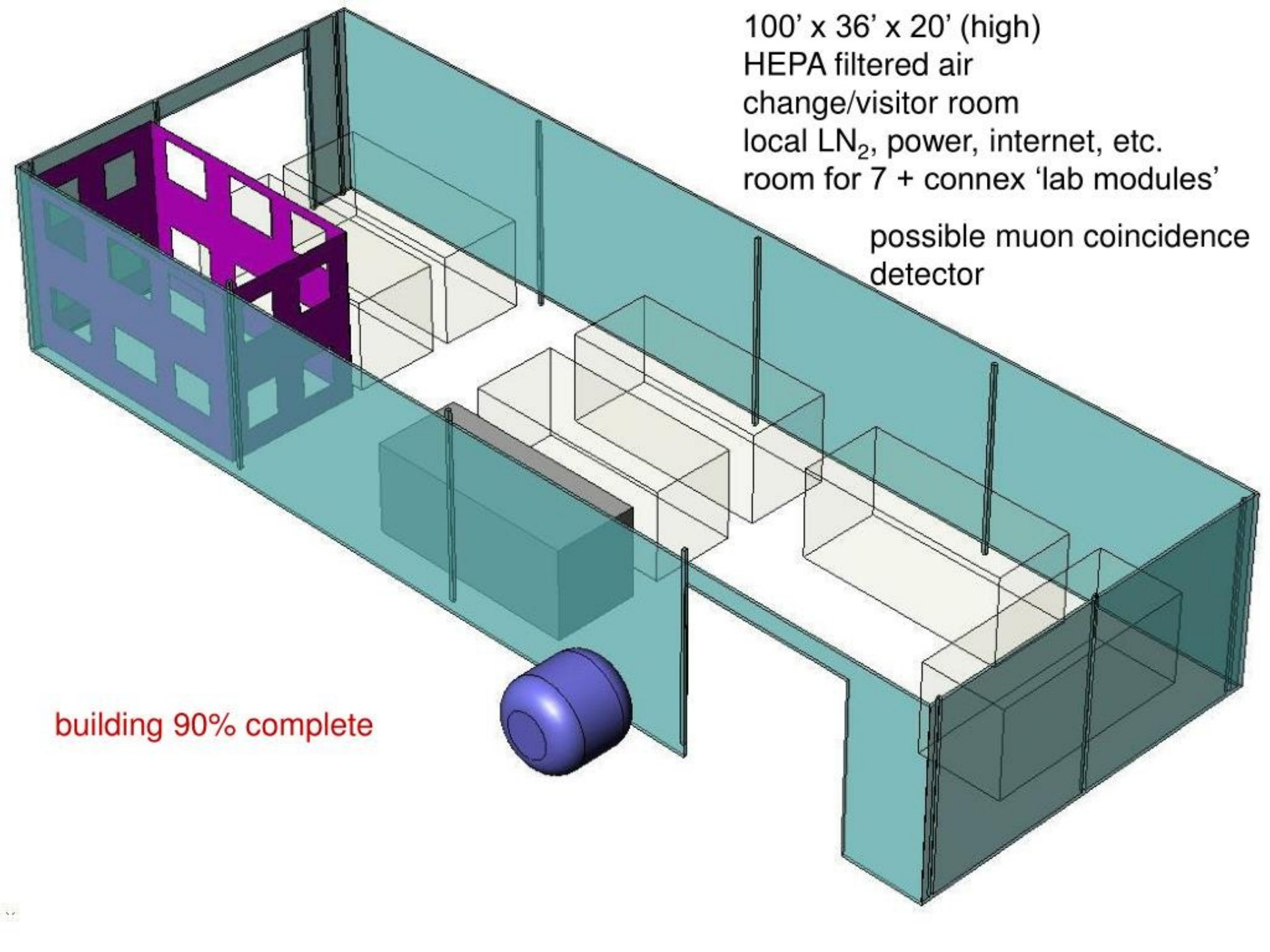
Height 26’ – 105’ (8 – 32 m)

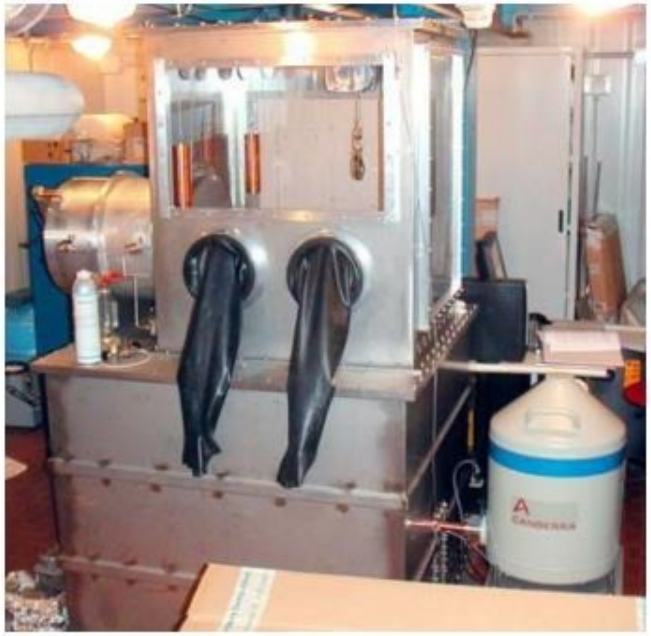
Potential space is ***HUGE***

Kimballton Underground Research Facility

(during construction)

Virginia Tech
Invent the Future


100’ x 36’ x 20’ (high)
HEPA filtered air
change/visitor room
local LN_2, power, internet, etc.
room for 7 + connex ‘lab modules’
possible muon coincidence detector
building 90% complete



Typical Laboratory Module

- internal clean-room
- Rn reduced detector housing
- local shielding from rocks

Currently

- NIST ‘Melissa’ HPGe detector
- VT-1 Ortec low-background detector
- partner use of NRL-1 (in Gran Sasso)

Funded Phase I DUSEL R&D

- lab-scale Rn reduction
- ICPMS –vs – radioassay
- material screening

Phase II DUSEL R&D (expected proposal)

- two commercial screening detectors
- duplicate NRL-1 (GEMPI design)

KURF provides an excellent location for detector development and materials screening for DUSEL R&D, and is available *this* year.